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IS 14301 (1995): Kyanite for refractory industry [MTD 13: Ores and Raw Materials]

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उच्चतापसह उद्योग के लिये कायनाइट — विशिष्टि

Indian Standard

KYANITE FOR REFRACTORY INDUSTRY — SPECIFICATION

UDC 666.762.15

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 1995 **Price Group** 1

Ores and Raw Materials Sectional Committee, MTD 13

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Ores and Raw Materials Sectional Committee had been approved by the Metallurgical Engineering Division Council.

Kyanite is used in the manufacture of high-alumina refractory product. On calcination, it forms mullite.

Kyanite significantly expands on calcination and it is this property of kyanite which is usually made use of as a uncalcined blender with clays in green stage, so that the firing shrinkage induced in the clays is offset by volume expansion of kyanite to keep the volume of fired bricks stable.

Raw kyanite after calcination is also used widely for the manufacture of high alumina refractories.

No marking clause is being specified in this standard as kyanite is supplied loose.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

KYANITE FOR REFRACTORY INDUSTRY — SPECIFICATION

1 SCOPE

This standard covers the requirements of kyanite used in the manufacture of high-alumina refractory products.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
1335 : 1979	Method for direct determination of alumina in refractory materials (*first revision*)
1528	Methods of sampling and physical tests for refractory materials
(Part 1) : 1980	Determination of pyromeric cone equivalent (PCE) or softening point (*second revision*)
(Part 7) : 1974	Method of sampling and criteria for conformity (*first revision*)

3 TERMINOLOGY

3.1 For the purpose of this standard, the following definitions shall apply.

3.2 Kyanite

a) It is one of the three minerals having same formulae (Al_2O_3 SiO_2) but have different crystalline forms, or

b) a rock containing a major portion of this material.

3.3 Mullite

A silicate of alumina having the theoretical formula ($3Al_2O_3$ $2SiO_2$).

3.4 Pyrometric Cone Equivalent (PCE)

The number (or numbers) of the standard cone (or cones) which bends at the temperature nearest to that at which the test cone bends under the standardized conditions of the refractoriness test.

4 GRADES

There shall be two grades of kyanite Grade 1 and Grade 2.

5 REQUIREMENTS

5.1 Chemical Composition

The material when analysed in accordance with IS 1335 : 1979 shall have the limits for constituents as given in Table 1. The constituents for which method of tests is not specified in IS 1335, the test method shall be as agreed to between the purchaser and the supplier.

5.2 Physical Test

The pyrometric cone equivalent (PCE) when determined in accordance with IS 1528 (Part 1) : 1980 shall be not less than 36 for Grade 1 and 35 for Grade 2.

Table 1 Chemical Requirements of Kyanite

(*Clauses* 4.1 *and* 5.1)

Constituent	Requirements, Percent	
	Grade 1	Grade 2
Al_2O_3, *Min*	58	54
Fe_2O_3, *Max*	1.5	1.5
$K_2O + Na_2O$, *Max*	1.0 *max*	1.0 *max*

6 SIZE

6.1 Unless otherwise specified the material shall be supplied in lumps. The particle size range shall be +50 mm −150 mm or +10 mm −50 mm.

6.2 The following tolerance shall apply on the size −5 percent undersize, +10 percent oversize.

7 SAMPLING

The material shall be sampled in accordance with IS 1528 (Part 7) : 1974.

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